

AMENDMENTS TO THE CLAIMS

Following is a listing of all claims in the present application, which listing supersedes all previously presented claims:

Listing of Claims:

1. (Currently Amended) A method for manufacturing a magnetic field detecting element having a soft magnetic core formed on a semiconductor substrate, first and second coils arranged on upper and lower surfaces of the soft magnetic core, respectively, the first and second coils each having a plurality of coil lines, the method comprising:

forming a first seed film to a predetermined thickness on the semiconductor substrate;

removing a portion of the first seed film using a predetermined pattern so that each of the plurality of coil lines constituting the first coil that would be is subsequently formed on a remaining portion of the first seed film is separated from the others;

forming a first plating mold having a plurality of grooves corresponding to the predetermined pattern, on an upper portion of the first seed film;

forming the plurality of coil lines constituting the first coil by filling the plurality of grooves of the first plating mold with metal;

forming the soft magnetic core and the second coil on an upper portion of the semiconductor substrate and on the remaining portion of the seed film where the first coil is formed; and

cutting off edges of the semiconductor substrate so that each of the plurality of coil lines separated by the predetermined pattern are insulated from each other.

2. (Currently Amended) The method as claimed in claim 1, wherein removing the portion of the first seed film further comprises:

forming a photoresist layer on an upper surface of the first seed film;

exposing and developing the photoresist to form the predetermined pattern; and etching the first seed film according to the predetermined pattern.

3. (Previously Presented) The method as claimed in claim 1, wherein filling the plurality of grooves of the first plating mold with metal comprises electric plating.

4. (Previously Presented) The method as claimed in claim 1, wherein forming the soft magnetic core further comprises:

planarizing an upper surface of the semiconductor substrate on which the first coil is formed;

spreading an insulating film on the planarized upper surface of the semiconductor substrate;

spreading a soft magnetic material film on an upper surface of the insulating film;

forming a photoresist layer on the soft magnetic material film and exposing and developing the photoresist layer to form a pattern of the soft magnetic core; and

etching the soft magnetic material film according to the pattern.

5. (Previously Presented-Withdrawn) The method as claimed in claim 1, wherein forming the soft magnetic core comprises

removing the first plating mold;

forming an insulating film to a height greater than a height of the first coil, on an upper surface of the semiconductor substrate from which the first plating mold has been removed;

spreading a soft magnetic material film on an upper surface of the insulating film;

forming a photoresist layer on the soft magnetic material film and exposing and developing the photoresist layer to form a pattern of the soft magnetic core; and

etching the soft magnetic material film according to the pattern.

6. (Currently Amended) [[A]] The method as claimed in claim 1, wherein forming the second coil further comprises: for manufacturing a magnetic field detecting element having a soft magnetic core formed on a semiconductor substrate, and a first and second coils respectively arranged on upper and lower surfaces of the soft magnetic core, the first and second coils each having a plurality of coil lines, the method comprising

~~forming a first seed film to a predetermined thickness on the semiconductor substrate;~~

~~removing a portion of the first seed film using a predetermined first pattern so that each of the plurality of coil lines constituting the first coil to be subsequently formed on the first seed film is separated from the others;~~

forming a first plating mold having a plurality of grooves that corresponds to the predetermined first pattern, on an upper portion of the first seed film;

forming the plurality of coil lines constituting the first coil by filling the plurality of grooves of the first plating mold with metal;

forming the soft magnetic core on the semiconductor substrate where the first coil is formed;

forming a second insulating film on the semiconductor substrate where the soft magnetic core is formed;

forming a second seed film on an upper surface of the second insulating film;

removing the second seed film using a predetermined second pattern so that a plurality of coil lines constituting the second coil to be subsequently formed on the second seed film are separated from each other;

forming a second plating mold having a plurality of grooves that corresponds corresponding to the second pattern, on an upper portion of the second seed film; and

forming a plurality of coil lines constituting the second coil by filling the plurality of grooves groove of the second plating mold with metal[();], and

wherein cutting off edges includes cutting off edges on sides of the semiconductor substrate so that each of the plurality of coil lines constituting the first and the second coils separated by the first and the second patterns are insulated from each other.

7. (Previously Presented) The method as claimed in claim 6, wherein filling the plurality of grooves of the first and the second plating molds with metal comprises an electric plating.

8. (Previously Presented-Withdrawn) The method as claimed in claim 6, wherein forming the soft magnetic core further comprises:

planarizing an upper surface of the semiconductor substrate on which the first coil is formed;

spreading a first insulating film on the planarized upper surface of the semiconductor substrate;

spreading a soft magnetic material film on an upper portion of the first insulating film;

forming a photoresist layer on the soft magnetic material film and exposing and developing the photoresist layer to form a pattern of the soft magnetic core; and etching the soft magnetic material film according to the pattern.

9.-20. (Canceled).